District Council Food Sampling in Northern Ireland

2010

A Report by the Northern Ireland Strategic Committee on Food Surveillance
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Executive Summary

The safety and quality of food, including labelling, are the responsibility of the food businesses concerned. However official Food Surveillance is an important public health measure providing reassurance that the necessary mechanisms are in place to identify and deal with food that is unsafe or not of satisfactory quality. This report collates data from a central database which captures the food sampling activities undertaken by the 26 environmental health departments across Northern Ireland. It contains summary details of the outcome of over 8800 food samples which were obtained by sampling officers during 2010 for microbiological and chemical analysis. These samples were taken for enforcement/investigation or surveillance/monitoring purposes based on risk and it is important to bear in mind that in this report may not represent the totality of the food chain.

The aim of this overview report is to facilitate environmental health officers in developing and refining future targeted food sampling programmes. Hence recommendations are proposed that are hoped to further improve compliance and indicate the issues that might be explored in future work.

In 2010 there were 6354 samples submitted for microbiological examination and 2489 samples submitted for chemical analysis. 67.2% of samples submitted for microbiological examination were reported as satisfactory whilst 55.6% of samples submitted for chemical analysis were satisfactory.

Overall, 36.1% of all samples (microbiological and chemical) taken during 2010 were unsatisfactory. The 4 year average for microbiological unsatisfactory results was 31% and the 4 year average for unsatisfactory chemical analysis was 46.4%.

Microbiological food examination

Reassuringly, there were relatively few food pathogens found. There was evidence of the presence of Listeria species in some ready-to-eat foods, albeit at low levels, and as such their occurrence in food is being monitored. It is also reassuring to
note that the microbiological examination of foods sourced from retail and catering establishments, which form the largest premises category, were found to contain relatively few pathogenic organisms. However almost a third of samples were reported to be of microbiologically unsatisfactory quality, indicating a potential failure in hygiene practices. Clearly food hygiene needs to be kept under review and it would appear that the targeting of sampling is effective at identifying hygiene failures and of value in providing an evidence base for officers to inform future interventions and to improve practices.

**Chemical analysis of food**

Chemical analysis deals with food safety (for example additives and contaminants), allergens, composition and labelling. Food safety problems appear to be relatively few. Of the samples tested for preservative 3% contained more than the permitted level, and 11 instances of excess of flavour enhancer mainly in prepared dishes from take-aways were found. The findings also indicate that certain groups of food manufacturers and manufacturers selling by retail are failing to comply with the labelling requirements for prepacked foods, particularly ingredients.

The Public Analyst also analysed a range of food for evidence of food substitution. In 2010 there were 42 instances of substitution, including mixtures of meat species sold as “minced beef”, fish of other species being sold under “premium” descriptions such as “Cod”, and “Cream cakes” which were filled with artificial cream, not dairy cream. These unacceptable practices amount to deliberate food fraud.

There were 31(1.2%) samples reported to have misleading descriptions, these ranged from products declared to contain such ingredients as cream and ham yet they did not contain such ingredients. Some samples of mince meats were also found to be described as “low fat” but were not and a sample of “beef stew” described as “home made” contained soya as an ingredient.

The food type most frequently found to have labelling faults were meat and meat products, Almost a fifth of products tested failed to disclose properly or at all the amounts of high value ingredients, something hard pressed consumers depend upon to make value for money choices.
UKFSS database

Since early 2007 the database has identified possible trends and associations for further investigation. As the database expands both in terms of geographical coverage within the UK and in the number/type of foods sampled and their outcomes, it will supplement knowledge on food safety and standards. In 2010 sample data results were for the last time recorded on UKFSS database, in accordance with the Public Health Laboratory Service guidelines now superseded by the new Health Protection Agency guidelines.

Recommendations

NISCFS makes the following recommendations based on the information contained in this report:

Microbiological sampling recommendations

- *Listeria monocytogenes* was the most common pathogen found (detected). Figures across the UK of detection of *Listeria monocytogenes* from FSS should be inputted into the research of the *Listeria* Risk Management Programme.

- It may be appropriate to consider conducting a survey of chilled RTE food supplied by commercial sandwich manufacturers to institutional establishments serving vulnerable groups of people e.g. cancer wards, residential care homes, maternity wards etc for the presence of *Listeria* species.

- Over the next five years FSA should consider further investigation based on the outcome of the evaluation of a larger dataset, in order to inform guidance and advice to food business operators regarding the handling, storage and preparation of high risk foods that support the growth of pathogens.

- FSA should consider amending FSS Net software to allow more detailed coding of food premises to be utilised in analysis of data.
For the purpose of UKFSS the Food Examiners will need clarification concerning whether borderline sample results would be, overall, counted as satisfactory or unsatisfactory under the Health Protection Agency guidelines.

The range number and scope of foods examined for Campylobacter species should be reviewed by the Northern Ireland Public Health Laboratory.

Chemical sampling recommendations

- The decline in the number of samples submitted for analysis over the last four years, however this cannot be justified on the grounds of risk, as the proportion of samples found to be unsatisfactory has not declined.

- FSA in NI and NIFLG should jointly organise a workshop / seminar for experienced EHOs, with the aim of determining which areas of food standards and labelling might be improved in Northern Ireland, also how this might be achieved.

- There is evidence in this report of an increased incidence of food fraud. Examples would include food that was misdescribed, or food with misleading labelling. Local and regional sampling plans should take account of these trends.

- The 2010 Ham in Pizza survey identified the use of reformed substitutes as the widely used ingredient in take-away pizzas sold in N. Ireland in place of ham. The outcomes of this survey will require an educative approach to the consumers and a graduated enforcement approach to catering sector.

- Sampling plans must also take account of the emerging and unpredictable risk posed by foods sourced from the third world, where legislative controls may be weak in comparison with the EU.

- The valuable contribution to food standards enforcement made by the participation of Councils in both regional and national sampling surveys, often as a result of local initiatives, is noted and must be encouraged.

- There is a need for extraction of food standards data from the UKFSS, on a planned basis throughout the year, so that emerging trends are recognised,
and challenges met. This is a fundamental objective in the original planning of the UKFSS and requires careful fund allocation to ensure the effective delivery use, strained resources.

**General recommendations**

As the UK Food Surveillance System develops, it is hoped that national trends can be examined with a view to directing scarce resources to the cost effective outcomes. This will require research expertise, utilising biometric principles, to ensure the outputs of the Food Surveillance System are robust and stand up to scrutiny.

The commitment to the FSS outcomes is a critical aspect of ensuring the public receive health assurances and consumer protection in a cost effective manner. This can only be achieved by a planned and sustained business commitment involved dedicated funding to ensure the development outcomes are secured.

Annual reports will provide valuable evidence in persuading local authorities to invest in food sampling activities for the pursuit of long term health benefits.

**FSA Strategic Aims**

The activities reported herein support FSA aims:

- foods produced or sold in the UK are safe to eat
- food producers and caterers give priority to consumer interests in relation to food
- consumers have the information and understanding they need to make informed choices about where and what they eat
- regulation is effective, risk-based and proportionate, is clear about the responsibilities of food business operators, and protects consumers and their interests from fraud and other risks
- enforcement is effective, consistent, risk-based and proportionate and is
focused on improving public health

Acknowledgements

The NISCFS acknowledges EHOs working with NIFLG in local, regional and national surveys to help highlight trends in food microbiology. Such work has, and will continue to inform enforcement authorities and FSA in NI on the safety of food offered for, or prepared for human consumption.

Comments on this report are welcomed and should be forwarded to the Food Standards Agency 10a-c Clarendon Road Belfast, BT1 3BG, or email infofsani@foodstandards.gsi.gov.uk
In 2010, the results of microbiological examination and chemical analysis for a total of 8843 samples were submitted to the UKFSS database over the 12 month period. The microbiological samples were recorded on UKFSS and categorised into either satisfactory or unsatisfactory. For the purposes of UKFSS and this report, satisfactory samples are samples categorised as satisfactory in accordance with the “Guidelines for the microbiological quality of some ready to eat foods sampled at the point of sale” issued by the Public Health Laboratory Service (PHLS) Advisory Committee (September 2000).

A “satisfactory” sample is one in which all the test parameters applied to the sample has been certified by the examiner as passing the required standard. Unsatisfactory samples recorded for UKFSS purposes are samples categorised as “Acceptable”, “Unsatisfactory” or “Unacceptable/Potentially Hazardous” in accordance with the above mentioned guidelines. “Acceptable” samples are samples that are deemed acceptable at point of human consumption. Whilst acceptable samples in effect reflect borderline limits of microbiological quality, they may present a safety risk as they may contain levels of pathogens which could cause illness in vulnerable patients, or if growth of pathogens was allowed this could result in some samples becoming potentially hazardous within shelf life.

Samples which are categorised as “acceptable” merit further investigation for the reasons stated above. The effect of this classification for UKFSS purposes is that the percentage of samples that fall into the “acceptable” range, classified as unsatisfactory, raises the overall rate of samples classified as unsatisfactory. For the purposes of the 2010 report it has not been possible to set out the total number of samples that were acceptable, however, this should not be an issue for 2011 data due to the implementation of new outcome codes that help to easily identify specific reasons for sample failure.
PHLS guidelines have now been superseded by new Health Protection Agency guidelines and 2011 results of food examination will be categorised for microbiological purposes using these new guidelines.

It should be noted that whilst there are a number of samples classed as unsatisfactory, the failures in many of the samples was not as a result of the presence of public health pathogens. The report looks at the different pathogens which are few in number compared with the total number of samples and confirms that actions were taken to investigate and correct situations where unacceptable sample results were detected.

A breakdown of the number of samples taken for microbiological and chemical purposes, and those giving an overall satisfactory result is presented in Table 1.

Table 1: Summary of microbiological and chemical analysis of food for 2010

<table>
<thead>
<tr>
<th>Nature of testing</th>
<th>Samples taken in 2010</th>
<th>Number of samples giving an overall satisfactory result in 2010</th>
<th>% of Satisfactory Samples</th>
<th>% of Unsatisfactory samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microbiological</td>
<td>6354</td>
<td>4267</td>
<td>67.2</td>
<td>32.8</td>
</tr>
<tr>
<td>Chemical</td>
<td>2489</td>
<td>1383</td>
<td>55.6</td>
<td>44.4</td>
</tr>
<tr>
<td>Total</td>
<td>8843</td>
<td>5650</td>
<td>63.9</td>
<td>36.1</td>
</tr>
</tbody>
</table>

In 2010 there were 6354 samples submitted for microbiological examination and 2489 samples submitted for chemical analysis. 67.2% of samples submitted for microbiological examination were reported as satisfactory whilst 55.6% of samples submitted for chemical analysis were satisfactory.

Overall, 36.1 % of all samples (microbiological and chemical) taken during 2010 were unsatisfactory. The 4 year average for microbiological unsatisfactory results was 31% and the 4 year average for unsatisfactory chemical analysis was 46.4 %.

The majority of unsatisfactory samples for microbiological examination were unsatisfactory not because of the presence of pathogens but due to the presence of
hygiene indicator microorganisms or raised bacterial counts. Collectively these sample results raise the overall number of samples that fall outside the satisfactory range.

In relation to the chemical analysis of food samples the lower level of satisfactory results is due to the fact that some samples are reported as compositionally genuine but have labelling errors and as a consequence are reported as unsatisfactory. This has been an issue raised in previous reports of the Northern Ireland Strategic Committee on Food Surveillance.

**Recommendation**

FSA in NI and NIFLG should jointly organise a workshop/seminar for experienced EHOs, with the aim of determining which areas of food standards and labelling might be improved in Northern Ireland, also how this might be achieved.

Since 2007 there has been an increase in the number of samples submitted for microbiological examination being entered on UKFSS (Table 2).

**Table 2: Comparison of numbers of satisfactory and unsatisfactory microbiological and chemical samples in years 2007-2010**

<table>
<thead>
<tr>
<th>Year</th>
<th>No. Micro samples</th>
<th>% Unsatisfactory</th>
<th>No. chemical samples</th>
<th>% Unsatisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>5878</td>
<td>30.3</td>
<td>2771</td>
<td>48.4</td>
</tr>
<tr>
<td>2008</td>
<td>6236</td>
<td>29.2</td>
<td>3078</td>
<td>50.1</td>
</tr>
<tr>
<td>2009</td>
<td>6439</td>
<td>31.7</td>
<td>2527</td>
<td>43</td>
</tr>
<tr>
<td>2010</td>
<td>6354</td>
<td>33</td>
<td>2489</td>
<td>44</td>
</tr>
</tbody>
</table>

In 2007 there were 5878 microbiological samples submitted and in 2010 there were 6354 microbiological samples. In the case of samples submitted for chemical analysis there was a reduction in the number of samples submitted. In 2007 there were 2771 samples submitted and this figure dropped to 2489 in 2010. Local Authority Enforcement Monitoring System (LAEMS) data shows a 10% drop in sampling across the UK in 2010 with a 30% drop in chemical sampling. In the
current economic climate, there is added pressure on local authorities across the UK to establish and maintain appropriate sampling levels. Data submitted to UKFSS should help inform a risk assessment to direct where resources should be targeted in relation to chemical sampling.

**Recommendation**

The data presented in this report indicate a trend towards a decline in the number of samples submitted for chemical analysis over the last four years, however the proportion of samples found to be unsatisfactory has not declined. On this basis a further decline in sample numbers cannot be justified on the grounds of risk.

The most frequently sampled food categories for microbiological examination and chemical analysis are shown in Table 3. These were ‘Meat and Meat Products, Game and Poultry’ (38.9% of all samples taken) and ‘Prepared Dishes’ (16.9% of all samples taken). In the ‘Meat and Meat Products’ category, 44.6% of total samples taken gave an overall unsatisfactory result; in the ‘Prepared Dishes’ category, 27.3% of total samples taken gave an overall unsatisfactory result. In addition, on FSS Net, food categories are limited to those categories used for LAEMS purposes. In total there are eighteen categories used and the categories currently are generic giving little insight into issues with specific types of foods. To assist enforcement officers in comparing particular business types and obtain more useful data it would be useful to review the current premises codes to identify if improvements could be made. If premises and food category tree fields were amended, more specific and relevant data could be obtained.

**Table 3: Number of satisfactory and unsatisfactory samples according to food category**

<table>
<thead>
<tr>
<th>Food category</th>
<th>Unsatisfactory</th>
<th>Satisfactory</th>
<th>Total No Samples Taken</th>
<th>% Unsatisfactory for Food Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additives</td>
<td>3</td>
<td>12</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Bakery and Cereal Products</td>
<td>176</td>
<td>281</td>
<td>457</td>
<td>38.5</td>
</tr>
<tr>
<td>Beverages</td>
<td>10</td>
<td>0</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Cakes and Confectionery</td>
<td>206</td>
<td>123</td>
<td>329</td>
<td>62.6</td>
</tr>
<tr>
<td>Dairy Products</td>
<td>52</td>
<td>247</td>
<td>299</td>
<td>17.4</td>
</tr>
<tr>
<td>Drinks</td>
<td>36</td>
<td>153</td>
<td>189</td>
<td>19</td>
</tr>
<tr>
<td>Egg and Egg Products</td>
<td>88</td>
<td>114</td>
<td>202</td>
<td>43.6</td>
</tr>
</tbody>
</table>
The majority of samples in Northern Ireland were taken from ‘Restaurants and caterers’ (42.6%), with ‘Retailers accounting for 28.3% and ‘Manufacturing (including manufacturers mainly selling by retail sales) accounting for 25.2 % of all samples taken (Table 4).

Table 4: Number of satisfactory and unsatisfactory samples recorded in 2010 according to premises type

<table>
<thead>
<tr>
<th>Premises category</th>
<th>Unsatisfactory</th>
<th>Satisfactory</th>
<th>Grand Total</th>
<th>% of Total</th>
<th>% Unsatisfactory for Premises Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributors/Transporters</td>
<td>62</td>
<td>169</td>
<td>231</td>
<td>2.6</td>
<td>26.8</td>
</tr>
<tr>
<td>Importers/Exporters</td>
<td>25</td>
<td>23</td>
<td>48</td>
<td>0.5</td>
<td>52.1</td>
</tr>
<tr>
<td>Manufacturers mainly selling by retail</td>
<td>448</td>
<td>496</td>
<td>944</td>
<td>10.7</td>
<td>47.5</td>
</tr>
<tr>
<td>Manufacturers/processors</td>
<td>409</td>
<td>869</td>
<td>1278</td>
<td>14.5</td>
<td>32</td>
</tr>
<tr>
<td>Packers</td>
<td>4</td>
<td>18</td>
<td>22</td>
<td>0.2</td>
<td>18.2</td>
</tr>
<tr>
<td>Primary Producers</td>
<td>4</td>
<td>10</td>
<td>14</td>
<td>0.2</td>
<td>28.6</td>
</tr>
<tr>
<td>Restaurants and other Caterers</td>
<td>1122</td>
<td>2646</td>
<td>3768</td>
<td>42.6</td>
<td>29.8</td>
</tr>
<tr>
<td>Retailers</td>
<td>1108</td>
<td>1393</td>
<td>2501</td>
<td>28.3</td>
<td>44.3</td>
</tr>
<tr>
<td>Slaughterhouses(^1)</td>
<td>11</td>
<td>26</td>
<td>37</td>
<td>0.4</td>
<td>29.7</td>
</tr>
<tr>
<td>Grand Total</td>
<td>3193</td>
<td>5650</td>
<td>8843</td>
<td>100.0</td>
<td>36.1</td>
</tr>
</tbody>
</table>

\(^1\) In 2010 due to a software conflict in one district council a small number of samples were erroneously classified as being taken from Slaughterhouses. The error has been corrected for 2011 data.
Due to limitations of premises coding in UKFSS it was not possible to obtain a breakdown within the different premises categories to establish which food businesses were involved with samples failing to comply with microbiological standards.

**Recommendations**

- Consideration should be given to reviewing the current premises and food category fields in consultation with environmental health colleagues to identify where improvements could be made to obtain more specific data from UKFSS.

- Based on figures presented consideration should be given to any identified gaps in sampling to arrive at an explanation as to why this is the case.
2.1 - NUMBERS OF SAMPLES AND LEVELS OF COMPLIANCE

Overall, 67.2% (4267 out of 6354) of all microbiological samples taken by participating District Councils were found to be satisfactory. The remainder 32.8% were classified as unsatisfactory (including “acceptable results”) however it should be noted that as in previous years, unsatisfactory samples were rarely found to be contaminated with bacteria at levels that would present a risk to consumer health.

2.2 - DETECTION OF PATHOGENS IN FOOD SAMPLES

In 2010 there were 6354 samples tested for the presence of at least one of the following key foodborne pathogens: *Salmonella, Campylobacter, Escherichia coli O157, Listeria monocytogenes, Clostridium perfringens, Staphylococcus aureus* and *Bacillus cereus*. Details are set out in Table 5. Table 5 data is based on the Public Health Laboratory Service (PHLS) guidelines for the microbiological quality of some ready to eat foods sampled at the point of sale. (September 2012)

Fifty samples of the 6354 samples analysed failed due to the presence of one of these pathogens at levels which could be considered a risk to human health and nine samples examined with presence of pathogens at acceptable levels, which are recorded for FSS purposes as unsatisfactory.

**Table 5: Test results for pathogens**

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Number of samples tested</th>
<th>Samples failed for unsatisfactory, unsatisfactory/potentially hazardous levels of pathogen</th>
<th>Samples failed for Acceptable levels of pathogen</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Salmonella</em></td>
<td>5847</td>
<td>2 <em>Salmonella kedougou</em> was detected in 2 samples of sweet chilli and cranberry coleslaw</td>
<td>NA</td>
</tr>
<tr>
<td><em>Campylobacter</em></td>
<td>391¹</td>
<td>1 <em>Campylobacter</em> bacteria was found in a sample of ready to eat lettuce collected at a catering establishment</td>
<td>NA</td>
</tr>
</tbody>
</table>
1. Test for *Campylobacter* and *E. Coli O157* bacteria in food are not done on a routine basis on all food. If there is a case of food poisoning and foods are linked to the case then tests will be applied for *Campylobacter*. In addition tests are scheduled if an officer identifies potential cross contamination issues in a food operation. Tests would also be done in respect of a sample submitted as a follow up to a food poisoning incident or outbreak.

2. Tests for *Listeria monocytogenes* (enumeration) are done on a planned basis for most food samples submitted. The *Listeria monocytogenes* (detection) tests are non routine and tend to be used for certain foods which explains the difference in the number of samples currently screened for *Listeria monocytogenes*.

3. *Bacillus cereus* testing is done routinely on most food samples

It should be noted that on discovery of a pathogenic bacteria in food the Food examiner informs the sampling officer who then initiates corrective actions including removal of potentially hazardous food from the food chain, liaison with FSA where
necessary, investigations to establish the cause and to ensure preventative measures put in place. Further samples are often taken to verify adequacy of preventative measures implemented by food business operator. Swabs and a range of wiping cloths are also used as a means of tracing potential sources of contamination.

Listeria testing is performed in two ways at NIPHL. The test performed on most samples is a quantification analysis (enumeration technique) that reports the number of colony forming units (cfu) per gram. The other analysis (enrichment technique) tests 25 grams of the food and reports detected/not detected. This test is used on specific dairy samples i.e cheese (hard and soft); samples submitted at the end of the manufacturing process or samples from manufacturers selling mainly as retail; samples packaged under modified atmosphere or vacuum packed to extend shelf life; occasionally food poisoning checks if there is clear indication that Listeria monocytogenes is implicated; and any Listeria outbreak situations. Other dairy samples such as dairy cream, ice-cream, butter, yogurts etc are tested in a similar qualitative way i.e. using enrichment techniques and report the result as Detected/Not detected per gram of sample.

Listeria monocytogenes, whilst infection is rare, causes more fatalities in the UK than any other food borne pathogen. It was by far the most commonly detected pathogen found in 29 (2.5%) of the 1127 samples tested on enrichment. The failure rate for enumeration, which quantifies numbers of organisms, was still very low with only 9 samples (0.17%) found to contain more than 20 organisms per gram, 7 of which contained more than 100 organisms per gram.

Concerning Listeria monocytogenes detection in 25 grams a total of 29 samples taken from 17 samples cooked meat had Listeria monocytogenes detected of which 11 samples were for cooked poultry.

The failure rate for Listeria monocytogenes quantification analysis (enumeration) was very low (0.13%).
Table 6: Categories of premises from which *Listeria monocytogenes* were detected

<table>
<thead>
<tr>
<th>Premises category</th>
<th>Number of samples</th>
<th>% of total detected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer/processor</td>
<td>14</td>
<td>48</td>
</tr>
<tr>
<td>Distribution/transport</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Retailers</td>
<td>7</td>
<td>24</td>
</tr>
<tr>
<td>Restaurants and other caterers</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Manufacturers selling by retail</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>100</td>
</tr>
</tbody>
</table>

Manufacturers and processors constituted 48% of the total number of samples with *Listeria monocytogenes* detected followed by samples taken from retailers (24%).

**Recommendations**

- *Listeria monocytogenes* was the most common pathogen found (detected). Figures across the UK of detection of *Listeria monocytogenes* from FSS should be inputted into the research of the *Listeria* Risk Management Programme.

- It may be appropriate to consider conducting a survey of chilled RTE food supplied by commercial sandwich manufacturers to institutional establishments serving vulnerable groups of people e.g. cancer wards, residential care homes, maternity wards etc for the presence of *Listeria* species.
**Clostridium perfringens**

The failure rate for samples of food tested for the presence of Clostridium perfringens was 0.13%

**Observations**

An observation recorded is the high numbers of *Clostridium perfringens* samples taken, and the low number of detections on analysis.

**Campylobacter**

There were 391 food samples examined for *Campylobacter* species compared with 5847 samples examined for *Salmonella* species. As *Campylobacter* is a more common form of food poisoning and a key priority of the Food Standards Agency to reduce its incidence (See Strategic Plan 2010-2015), the range, number and scope of foods examined should be reviewed by the Northern Ireland Public Health Laboratory.

**Bacillus cereus**

There were 5270 food samples examined for Bacillus cereus. The failure rate for samples of food tested for the presence of Bacillus cereus was 0.09%. The number of samples examined in Northern Ireland was compared with that in Scotland where only 252 food samples were examined (Based on 36 of 39 authorities using FSS Net in Scotland). The NIPHL may wish to review the value of the amount of testing of this organism given the low detection rate.

**Staphylococcus aureus**

There were 5926 food samples examined for *Staphylococcus aureus* organisms in food supplied in Northern Ireland but there were fewer detections of levels above required limits when compared with Figures for Scotland. (For example Scotland had 15 unsatisfactory samples and 71 borderline results based on new HPA guidelines).
The failure rate for samples of food tested for the presence of Staphylococcus was 0.1%. The difference in detection levels merits examination of the testing methods used at the laboratories.

2.3 - EXAMINATION OF FOOD FOR MICROBIOLOGICAL HYGIENE AND QUALITY

Hygiene Indicators

Hygiene indicators such as Enterobacteriaceae, non-VTEC E. coli and Listeria species (not L. monocytogenes) are used to assess issues relating to process control such as the quality of raw materials, undercooking and cross-contamination. These indicators allow food enforcement officers to focus on potential areas for concern in the production and handling of food. Table 8 shows the failure rates for hygiene indicators in samples tested.

Comparing the figures for hygiene indicators in Table 7 with the number of unsatisfactory samples recorded in 2010 according to premises type (Table 4 page 10) the highest % unsatisfactory samples for premises categories include Importers/Exporters (52.1%), Manufacturers mainly selling by retail (47.5%), and retailers (44.3%). Again, due to coding limitations in UKFSS, it was not possible to establish which food businesses were involved with samples failing to comply with microbiological standards.
### Table 7: Summary of results for samples tested for hygiene indicators

<table>
<thead>
<tr>
<th>Hygiene Indicator</th>
<th>Total number of samples tested</th>
<th>Food Category (Only food Categories with highest number of failures listed)</th>
<th>No. samples tested for indicator</th>
<th>Samples failed for unsatisfactory levels</th>
<th>Food Category</th>
<th>Samples failed for acceptable levels (Deemed Unsatisfactory)</th>
<th>Overall % unsatisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterobacteriaceae</td>
<td>5280</td>
<td>Cakes and Confectionery</td>
<td>146</td>
<td>40</td>
<td>Cakes and Confectionery</td>
<td>9</td>
<td>33.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dairy Products</td>
<td>15</td>
<td>2</td>
<td>Dairy Products</td>
<td>2</td>
<td>26.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fish and Shellfish</td>
<td>84</td>
<td>7</td>
<td>Fish and Shellfish</td>
<td>10</td>
<td>20.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Meat and Meat Products, Game and Poultry</td>
<td>2347</td>
<td>276</td>
<td>Meat and Meat Products, Game and Poultry</td>
<td>134</td>
<td>17.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Egg and Egg Products</td>
<td>183</td>
<td>18</td>
<td>Egg and Egg Products</td>
<td>11</td>
<td>15.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bakery and Cereal Products</td>
<td>229</td>
<td>28</td>
<td>Bakery and Cereal Products</td>
<td>14</td>
<td>18.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prepared Dishes</td>
<td>1146</td>
<td>70</td>
<td>Prepared Dishes</td>
<td>78</td>
<td>12.9</td>
</tr>
<tr>
<td>E.Coli (Non-vtec)</td>
<td>5521</td>
<td>Cakes and Confectionery</td>
<td>146</td>
<td>8</td>
<td>Cakes and Confectionery</td>
<td>2</td>
<td>6.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fish and Shellfish</td>
<td>171</td>
<td>2</td>
<td>Fish and Shellfish</td>
<td>2</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Meat and Meat Products, Game and Poultry</td>
<td>2374</td>
<td>35</td>
<td>Meat and Meat Products, Game and Poultry</td>
<td>14</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prepared Dishes</td>
<td>1162</td>
<td>11</td>
<td>Prepared Dishes</td>
<td>9</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bakery and Cereal Products</td>
<td>236</td>
<td>4</td>
<td>Bakery and Cereal Products</td>
<td>0</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fruit and vegetables</td>
<td>840</td>
<td>11</td>
<td>Fruit and vegetables</td>
<td>9</td>
<td>2.4</td>
</tr>
<tr>
<td>Listeria sp (enumeration)</td>
<td>5173</td>
<td>Bakery and Cereal Products</td>
<td>217</td>
<td>1</td>
<td>Bakery and Cereal Products</td>
<td>0</td>
<td>0.46</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fish and Shellfish</td>
<td>190</td>
<td>1</td>
<td>Fish and Shellfish</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Meat and Meat Products, Game and Poultry</td>
<td>2302</td>
<td>9</td>
<td>Meat and Meat Products, Game and Poultry</td>
<td>0</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prepared Dishes</td>
<td>1013</td>
<td>1</td>
<td>Prepared Dishes</td>
<td>1</td>
<td>0.2</td>
</tr>
</tbody>
</table>

**Note:** Table 7 data is based on the Public Health Laboratory Service (PHLS) guidelines for the microbiological quality of some ready to eat foods sampled at the point of sale. (September 2012).

**Recommendation**

Consideration should be given to reviewing the current premises and food category fields and codes in consultation with environmental health colleagues to identify where improvements could be made to obtain more specific data from UKFSS.

The figures above for Enterobacteriaceae and *E. coli* (non VTEC), and premises details for manufacturers selling mainly by retail, and retailers, suggest that cakes and confectionary in home bakeries might need closer inspection to evaluate the risk of contamination in light of the FSA’s publication of guidance in relation to cross
contamination from *E. coli*. In Table 7 over 30 of the 40 food samples of cakes and confectionery contained fresh cream.

The unsatisfactory percentage failure rate for *E.coli*, in manufacturing premises mainly selling by retail maybe attributed to cross contamination issues in butchers or home bakeries from raw meat contaminating ready to eat foods through dual use of areas, equipment and utensils. It may be appropriate for sampling officers to consider targeting butchers and home bakeries to ensure implementation of best practice as described in the recently published FSA guidance on *E.coli* cross contamination. (*E. coli* O157: Control of cross-contamination: Guidance for food business operators and enforcement authorities)

**Recommendation**

Consideration should be given to reviewing the data in relation to cakes and confectionary for hygiene indicators, in addition to premises type returning the highest percentage of unsatisfactory samples. Environmental Health colleagues should consider targeting butchers and home bakeries as a priority to ensure implementation of best practice to minimise the risk of cross contamination from *E. coli* from raw to ready to eat foods, and with reference to the recently published FSA Guidance on controlling cross contamination from *E. coli*.

**2.4 - AEROBIC COLONY COUNTS (ACCs)**

Of all foods submitted for microbiological examination 96% were tested for levels of bacteria by means of Aerobic Colony Counts (ACCs). ACCs provide an indication of quality and in isolation cannot be used to determine whether there may be a food safety risk. The ACC levels detected usually depend on either the stage at which the product has been sampled during its shelf-life, the method used to process the product, or on the way in which it has been handled or stored.

A total of 6113 samples were examined for ACCs and of these 5531 were classed as ready to eat food. The majority of these samples were within the ‘Meat and Meat Products’ (2218 samples, 40.1%) and ‘Prepared Dishes’ (1188 samples, 21.5%)
categories. Of the 2218 samples examined for ACCs within the ‘Meat and Meat Products’ category, a total of 1586 samples (71.5%) were described as ‘Cooked Meat’ or ‘Cooked Poultry’. Of the 1188 samples examined for ACCs within the ‘Prepared Dishes’ category, a total of 377 samples (31.7%) were ‘Sandwiches’.

In the PHLS ready to eat food guidelines there are five grades of acceptable results for ACC that are applied across eight different food groups (Meats, seafoods, desserts, savoury, vegetable, dairy, ready to eat meals and sandwiches and filled rolls). The five ACC levels are designated to specific food products within the eight categories.

The lower end of “Acceptable” ACC for Category 1 foods e.g. cooked burgers, meat pies, sausage roll, scotch egg, mousse/dessert is 1000 cfu/gram. For Category 2 foods e.g. shepherds pie, unsliced poultry, cakes/pastries, mayonnaise and pasta dishes the level is 10,000 cfu/gram. Category 3 foods e.g. sliced meats, trifle, pate, coleslaw and rice the level is 100,000 cfu/gram. Category 4 food e.g. cooked ham, homous, and prepared mixed salads, smoked fish and sandwiches without salad components the level is 1,000,000 cfu/gram. Category 5 foods have no set ACC level and include the following food types, raw ham, salami, smoked sausage, cheesecake, bean curd, fermented food, fresh fruit, and vegetables, cheese yoghurt, and sandwiches with salad or cheese components.

Details of Aerobic Colony counts for a wide range of food samples examined were filtered to remove ACC results less than 1 million cfu/gram. Table 8 shows details of the types of foods found with an ACC that was greater than 1 million cfu/gram even though the recorded food storage temperature was given as <8 centigrade. The table excludes results for which there was no recorded temperature given.
Table 8: Food types with an ACC greater than 1 million cfu/gram and with a recorded temperature of <8 centigrade

<table>
<thead>
<tr>
<th>Food Category</th>
<th>No. Samples</th>
<th>Temperature of storage at time of sale &lt;8 centigrade (excludes samples that were considered to fall within category 5 ACC$^1$)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bakery and Cereal Products</td>
<td>147</td>
<td>22</td>
<td>15</td>
</tr>
<tr>
<td>Cakes and Confectionery</td>
<td>134</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>Dairy Products</td>
<td>53</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Egg and Egg Products</td>
<td>117</td>
<td>18</td>
<td>15</td>
</tr>
<tr>
<td>Fish and Shellfish</td>
<td>167</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>Meat and Meat Products, Game and Poultry</td>
<td>1713</td>
<td>307</td>
<td>18</td>
</tr>
<tr>
<td>Prepared Dishes</td>
<td>770</td>
<td>96</td>
<td>12</td>
</tr>
<tr>
<td>Soups, Broths and Sauces</td>
<td>126</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

1. Category 5 ACC. This category includes foods such as fermented meats and dairy products, and fruit and vegetable certain prepared meals and some ice cream/desserts.

In 2010 there were 2165 samples of meat and meat products samples. Of these 307 samples (14%) had bacterial ACC levels in excess of 1 million cfu/gram, despite being taken from refrigerated displays.

2.5 - MICROBIOLOGICAL SAMPLING CONCLUSIONS

- The examination of data collated on UK FSS in 2010 indicate that, since 2007, there has been little change in the percentages of samples submitted for microbiological examination which give unsatisfactory results e.g. (29 - 33% of samples).

- Currently the UKFSS programme has limited coding for food premises compared with some council databases and in consequences there are limitations to the scope of analysis and interpretation of sample data. In 2010, 43% of microbiological samples were collected from restaurants and caterers and a further 28% coming from retailers. Each of these groups are diverse in nature and due to coding limitations it is difficult to gain insight on how specific sectors might be performing.
• Sampling data demonstrates that almost 1% of the foods sampled failed due to the detection of a pathogenic bacteria.

• *Listeria monocytogenes* was detected at unsatisfactory or acceptable levels in a range of ready-to-eat foods, with the data suggesting that cooked meats were the main source of the organism. For example, 17 of 29 samples tested for detection of *Listeria monocytogenes* in 25 grams were meat products. In addition, 6 of 9 samples tested by enumeration were also meat products.

• *Bacillus cereus*. 5270 samples of food were screened for the presence of *Bacillus cereus* with just 3 food samples found to contain the organism at unsatisfactory levels.

• *Staphylococcus aureus*. 5926 food samples were screened for the presence of *Staphylococcus aureus* with 5 samples being found unsatisfactory and just 1 falling into the “acceptable” level.

• Elevated levels of hygiene indicators. There were 288 food samples which failed microbiological examination tests for Enterobacteriaceae and a further 821 classified as “acceptable” but recorded as unsatisfactory for the purposes of UKFSS. This represents 17% of all microbiological examination failures. It should also be noted that 7% of these failures were attributed to meat and meat products.
3 – Chemical Sampling Data

3.1 - NUMBERS OF SAMPLES AND LEVELS OF COMPLIANCE

Food samples submitted to the Public Analyst are subjected to chemical analysis, and labelling information is also examined. The available scope of accredited tests is much wider than that used for microbiological examination, and the tests selected may fall into any one or more of the following categories, depending on the sample type, specific requests made, or the discretion of the Public Analyst:

- Composition – Certain foods must meet compositional standards set in either Community or UK law
- Additives – The use of food additives is highly regulated, on the basis of the precautionary principle, and in the interest of food safety. Monitoring the levels and types of additives being used in food is an essential public health measure.
- Contaminants – These may be of natural origin (e.g. mycotoxins), of environmental origin (e.g. lead, arsenic), man-made environmental contaminants (e.g. dioxins, PCBs), process contaminants (3-MCPD, acrylamide), or residues of crop treatment agents (pesticides). Monitoring the levels of contaminants present in our food, many of which could have health consequences, is also an essential public health measure.
- Nutrition parameters – Consumers are encouraged to make healthier food choices, and the information given on food labels which informs their decision must be checked to ensure that it is sufficiently accurate.
- Labelling information – There are detailed legislative requirements for information which must be given on food labels.
- Genetically Modified food – Only certain GM foods may be sold within the EU, and there are detailed labelling requirements.

Food is traded globally, and is increasingly sourced from third countries where controls may remain in development, and growers and manufacturers are perhaps less aware of good practice. EU RASFF alerts (the rapid alert system for food and
feed) would suggest that no part of the UK can afford to lower its guard, in terms of the chemical safety of food, food ingredients, and food contact materials.

Regarding food produced within Northern Ireland and the rest of the UK, surveillance and enforcement sampling of food for chemical analysis is an essential public protection measure in the current harsh economical climate. Consumers must be protected from deliberate food fraud (e.g. Vietnamese catfish sold as Cod), a debasement of existing products, and misleading labelling.

A total of 2489 samples were obtained for chemical analysis and taken as part of routine planned sampling, 211 (8.5%) of these samples were collected as part of regional and national surveys. Appendix 5 lists the various survey work undertaken in 2010.

The food samples are analysed by the Public Analyst for a number of parameters such as composition, labelling, presence of additives, statutory declaration of ingredients, contaminants and other issues.

It is worth noting that sampling officers also undertake sample screening exercises throughout the year. For example, use is made of specific gravity beads to test the alcoholic strength of spirits sold in pubs and clubs. In addition officers also use specific test strips to verify the authenticity of specific varieties of spirits. These screening sample tests results are not currently included in the UKFSS database.

Food was analysed for compliance with compositional standards and labelling. It should be noted however, that any type of labelling irregularity is reported as a sample failure for the purposes of UKFSS and therefore a number of unsatisfactory sample results could be attributed to labelling errors. In 2010, 1106 food samples 44% were reported as unsatisfactory and 2383 samples (56%) reported as satisfactory.

**Table 9: Comparing past records of samples submitted for chemical analysis**

<table>
<thead>
<tr>
<th>Year</th>
<th>No. chemical samples</th>
<th>% Unsatisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>2771</td>
<td>48.4</td>
</tr>
<tr>
<td>2008</td>
<td>3078</td>
<td>50.1</td>
</tr>
<tr>
<td>2009</td>
<td>2527</td>
<td>43</td>
</tr>
<tr>
<td>2010</td>
<td>2489</td>
<td>44</td>
</tr>
</tbody>
</table>
Over the 4 year period 2007-2010 the level of unsatisfactory samples submitted for chemical analysis varied between 43.0-50.1 % (Table 9).

In 2010 routine surveillance sampling activities were focused on the following food types:

- Meat and meat products
- Prepared dishes
- Bakery products and cereal
- Cakes and confectionery
- Drinks

These are food categories that tend to be made locally in butcheries, bakeries, retail, and catering outlets.

Food types sampled as part of enforcement and investigation work included:

- Meat and meat products
- Drinks
- Fruit and vegetable products
- Bakery products and cereal
- Prepared dishes

**Recommendation**

The data presented in Table 9 indicate a trend towards a decline in the number of samples submitted for analysis over the last four years, however the proportion of samples found to be unsatisfactory has not declined. On this basis a further decline in sample numbers cannot be justified on the grounds of risk.

Samples that failed to comply with food standards requirements (including food labelling requirements are summarised in Table 10.
Table 10: The top five foods failing chemical analysis

<table>
<thead>
<tr>
<th>Samples taken for Enforcement /Investigation</th>
<th>Samples taken for Surveillance/Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Meat and meat products</td>
<td>• Meat and meat products</td>
</tr>
<tr>
<td>• Drinks</td>
<td>• Cakes and confectionery</td>
</tr>
<tr>
<td>• Bakery products and cereal</td>
<td>• Prepared dishes</td>
</tr>
<tr>
<td>• Beverages</td>
<td>• Bakery products and cereal</td>
</tr>
<tr>
<td>• Cakes and confectionery</td>
<td>• Fruit and vegetable products</td>
</tr>
</tbody>
</table>

RESULTS BY PREMISES TYPE AND RISK CLASSIFICATION

Premises Type

The relationships between the type of premises being sampled and the analytical compliance were examined and it was noted that there were limited numbers of samples from, packers, importers and exporters premises (48 samples in total (1.9%)).

Retailers were the most frequent category of premises from which samples were taken (840 (34%), followed by manufacturers and processors (590 (24%).

The food premises categories from which food samples were taken which more frequently failed analytical and labelling standards were retailers (53.5%), manufacturers selling by retail (55.5%) and manufacturers and processors (42%).

There are occasions when samples are taken of imported foods at the point of destination after import. At present this information is not easily captured by UKFSS. It is anticipated that subsequent upgrades of the software will address this issue.

The current focus on sampling would appear to be justified and this profile should be kept under observation, however due to limitations of FSS Net coding it is not possible to get a better breakdown of the types of premises within these broader premises categories.
**Risk Classification**

The number of satisfactory and unsatisfactory analytical samples were compared with the food premises risk classification with “A” being the highest risk classification. The information is presented in Table 1.

**Table 11: Percentage failed samples within stated premises risk category**

<table>
<thead>
<tr>
<th>Premises classification</th>
<th>No. unsatisfactory samples</th>
<th>No. Satisfactory samples</th>
<th>% unsatisfactory within classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>108</td>
<td>137</td>
<td>44</td>
</tr>
<tr>
<td>B</td>
<td>654</td>
<td>730</td>
<td>47</td>
</tr>
<tr>
<td>C</td>
<td>276</td>
<td>423</td>
<td>39</td>
</tr>
<tr>
<td>Unrated</td>
<td>68</td>
<td>90</td>
<td>43</td>
</tr>
</tbody>
</table>

The majority of samples are taken from “B” risk classified premises 1384 samples (56%).

**3.2 - REASONS FOR CHEMICAL SAMPLE FAILURE**

There were 867 tests done on food for the presence of permitted additives. There were 25 samples of food reported to have excess preservative, these being mainly detected in meat and meat products.

There were also 11 tests conducted on food indicating excess of flavour enhancer mainly in prepared dishes from take-aways.

The Public Analyst also analysed a range of food for evidence of food substitution. In 2010 there were 42 instances of substitution, including mixtures of minced meats sold as “minced beef”, fish of other species being sold under “premium” descriptions such as “Cod”, and “Cream cakes” which were filled with artificial cream, not dairy cream. These unacceptable practices amount to deliberate food fraud.
Meat and meat products were the food category found to contain substitute ingredients.

There were 31(1.2%) samples reported to have misleading descriptions, these ranged from products declared to contain such ingredients as cream and ham yet they did not contain such ingredients. Some samples of mince meats were also found to be described as “low fat” but were not and a sample of “beef stew” described as “home made” contained soya as an ingredient.

**Recommendation**

There is evidence in this report of an increased incidence of food fraud. Examples would include food that was misdescribed (Vietnamese catfish sold as “Cod”, cheaper vodka sold as “Smirnoff”), or food with misleading labelling (Meat products having a lower meat content than was stated be present, “cream” cakes filled with cheaper artificial cream). Local and regional sampling plans should take account of these trends.
The food type most frequently found to have labelling faults were meat and meat products.

As there were significant numbers of samples failing composition and labelling requirements, the data was examined to establish reasons for such failures. The chemical sample results verified that in 2010:

- There were 462 (19%) that failed QUID requirements.
- 371 (15%) samples of meat and meat products failed to comply with quantitative ingredient declaration (QUID) requirements (the proportion of meat ingredient(s) was not stated, or was not stated in the required way), or other statutory declarations generally relating to the presence of additives were not made.
Figure 3: No. of food samples with QUID failure by food category

No. samples with QUID failure by food category

Recommendation

The 2010 Ham in Pizza survey identified the use of reformed substitutes as the widely used ingredient in take-away pizzas sold in N. Ireland in place of ham. The outcomes of this survey will require an educative approach to the consumers and a graduated enforcement approach to catering sector.
Over 45 (2%) samples of meat and meat products were not properly named or described.

There were 300 (12%) samples that failed to comply with ingredient listing requirements.

Food categories more likely to fail ingredient listing requirements were meat and meat products, bakery products (including flour confections) and prepared dishes which all had unsatisfactory ingredient lists.(257 samples)(10%)
Observation

It should be noted that the needs of consumers as regards accurate and intelligible labelling are, if anything, greater in the current economic climate. Legitimate businesses should be striving to comply with legislative requirements, and appropriate steps must be taken to facilitate and encourage them to this end. NIFLG are actively producing guidance for butchers and bakers to help inform them about better food labelling.

Comments

The District Councils have in the past been very active in providing advisory leaflets and guidance to small businesses to help them comply with food composition and labelling. The work continues on an annual basis and NIFLG continue to identify and co-ordinate potential interventions to target poor areas of compliance.

General recommendations

- FSA in NI and NIFLG should jointly organise a workshop / seminar for experienced EHOs, with the aim of determining which areas of food standards and labelling might be improved in Northern Ireland, also how this might be achieved.
• Sampling plans must also take account of the emerging and unpredictable risk posed by foods sourced from the third countries, where legislative controls may be weak in comparison with the EU.

• The valuable contribution to food standards enforcement made by the participation of Councils in both regional and national sampling surveys, often as a result of local initiatives, is noted and must be encouraged.

• There is a need for extraction of food standards data from the UKFSS, on a planned basis throughout the year, so that emerging trends are recognised, and challenges met. This is a fundamental objective in the original planning of the UKFSS and requires careful fund allocation to ensure the effective delivery and use of strained resources.

Provision of suitable enforcement guidance should be considered by NIFLG to help enforcement officers deal with continued non compliance with food labelling requirements.

Over the past 4 years the FSA has funded the project of joint food standards visits between the Public Analyst and EHOs to raise the awareness of food processing technology and potential for incorrect and misleading food products. It is recommended that the FSA/NIFLG in partnership should run a seminar to help focus on areas where food composition and labelling could be improved and how this might be done.

FSA should establish a special training event for the benefit of manufacturers mainly selling by retail to help them address food composition and labelling errors that are regularly identified in sampling.
Throughout the year, considerable resources are spent on food sampling for the purposes of informing the enforcement authorities that food businesses are meeting statutory standards for hygiene and safety in relation to their particular food operations and for compositional analysis.

**Microbiological food examination**

The number of foods and ingredients sampled are wide ranging and it is reassuring to note that a very high percentage of ready-to-eat foods have been found to be free from pathogenic bacteria. There is evidence of the presence of *Listeria* species in some ready-to-eat foods, albeit at low levels, and as such their occurrence in food is being monitored. It is also reassuring to note that the microbiological examination of foods sourced from retail and catering establishments, which form the largest premises category, were found to contain relatively few pathogenic organisms based on sampling work in 2010.

With 32.8% of microbiological samples being reported as unsatisfactory, (although for non-pathogenic issues), it would appear that the targeting of sampling is effective at identifying hygiene failures and of value in providing an evidence base for officers to inform future interventions and to improve practices.

The NISCFS acknowledges EHOs working with NIFLG in local, regional and national surveys to help highlight trends in food microbiology. Such work has, and will continue to inform enforcement authorities and FSA in NI on the safety of food offered for, or prepared for human consumption.

**Chemical analysis of food**

It is also apparent from this analysis that certain groups of food manufacturers and manufacturers selling by retail are failing to comply with the labelling requirements for prepacked foods, particularly ingredients.
The level of detail from the database regarding chemical analysis is limited but NISCF5 understands new outcome codes may be introduced which should ensure more detailed information is available.

**UKFSS database**

The database has been operational since early 2007 and already it is identifying possible trends and associations for further investigation. As the database expands both in terms of geographical coverage within the UK and in the number/type of foods sampled and their outcomes, it will add further to knowledge on food safety and standards. At present the resource which the database represents would appear to be under-utilised at all levels.
NISCFS makes the following recommendations based on the information contained in this report.

**Microbiological sampling recommendations**

- *Listeria monocytogenes* was the most common pathogen found (detected). Figures across the UK of detection of *Listeria monocytogenes* from FSS should be inputted into the research of the *Listeria* Risk Management Programme.

- It may be appropriate to consider conducting a survey of chilled RTE food supplied by commercial sandwich manufacturers to institutional establishments serving vulnerable groups of people e.g. cancer wards, residential care homes, maternity wards etc for the presence of *Listeria* species.

- Over the next five years FSA should consider further investigation based on the outcome of the evaluation of a larger dataset, in order to inform guidance and advice to food business operators regarding the handling, storage and preparation of high risk foods that support the growth of pathogens.

- FSA should consider amending FSS Net software to allow more detailed coding of food premises to be utilised in analysis of data.

- For the purpose of UKFSS the Food Examiners will need clarification concerning whether borderline sample results would be, overall, counted as satisfactory or unsatisfactory under the Health Protection Agency guidelines.

- The range number and scope of foods examined for Campylobacter species should be reviewed by the Northern Ireland Public Health Laboratory.
Chemical sampling recommendations

- The decline in the number of samples submitted for analysis over the last four years, however this cannot be justified on the grounds of risk, as the proportion of samples found to be unsatisfactory has not declined.
- FSA in NI and NIFLG should jointly organise a workshop / seminar for experienced EHOs, with the aim of determining which areas of food standards and labelling might be improved in Northern Ireland, also how this might be achieved.
- There is evidence in this report of an increased incidence of food fraud. Examples would include food that was misdescribed, or food with misleading labelling. Local and regional sampling plans should take account of these trends.
- The 2010 Ham in Pizza survey identified the use of reformed substitutes as the widely used ingredient in take–away pizzas sold in N. Ireland in place of ham. The outcomes of this survey will require an educative approach to the consumers and a graduated enforcement approach to catering sector.
- Sampling plans must also take account of the emerging and unpredictable risk posed by foods sourced from the third world, where legislative controls may be weak in comparison with the EU.
- The valuable contribution to food standards enforcement made by the participation of Councils in both regional and national sampling surveys, often as a result of local initiatives, is noted and must be encouraged.
- There is a need for extraction of food standards data from the UKFSS, on a planned basis throughout the year, so that emerging trends are recognised, and challenges met. This is a fundamental objective in the original planning of the UKFSS and requires careful fund allocation to ensure the effective delivery use, strained resources.
General recommendations

As the UK Food Surveillance System develops, it is hoped that national trends can be examined with a view to directing scarce resources to the cost effective outcomes. This will require research expertise, utilising biometric principles, to ensure the outputs of the Food Surveillance System are robust and stand up to scrutiny.

The commitment to the FSS outcomes is a critical aspect of ensuring the public receive health assurances and consumer protection in a cost effective manner. This can only be achieved by a planned and sustained business commitment involved dedicated funding to ensure the development outcomes are secured.

Annual reports will provide valuable evidence in persuading local authorities to invest in food sampling activities for the pursuit of long term health benefits.
6 - Reference documents for further information

Practical Sampling Guidance for food standards and feeding stuffs
(www.food.gov.uk/multimedia/pdfs/samplingguidance part1.pdf)

Practical Sampling Guidance for food standards and feeding stuffs
(www.food.gov.uk/multimedia/pdfs/samplingguidance part2.pdf)

LGR “Guidance on Food Sampling for Microbiological Examination” 2002
(www.lacors.gov.uk)

Food Safety Code of Practice

The Framework Agreement on Local Authority Food Law Enforcement.

Northern Ireland Food Liaison Group Guidance on microbiological and chemical
sampling. “Food Sampling Policies and Associated Guidance”

Food – Inspection, “Guideline for Official Sampling” (European Working Community
for food Inspection and Consumer Protection (EWFC)
(www.ewfc.org/pdf/Leitlinienproben-GB.pdf)

Guidelines for the preservation of official samples for analysis No. 36 2002 Campden
and Chorleywood Food Research Association Group.
Commission of European Communities Guidance Document (13 Nov 2006) on Official controls under EC Regulation No. 882/2004 concerning the microbiological sampling and testing of foodstuffs. 
(http://ec.europa.eu/food/food/controls/foodfeed/sampling_testing.pdf)

Food Sampling Policies – Food Standards NIFLG August 2009

HPA micro guidelines

EC Regulation 2073

Food Sampling by Scottish Local Authorities – 2010 Summary Report
Acknowledgements

Food Standards Agency
Northern Ireland Public Health Laboratory
Northern Ireland Food Liaison Group
Eurofins Laboratories
Food Standards Agency in Northern Ireland
District Council Environmental Health Practitioners and sampling officers
Safefood
Appendices

Appendix 1

The United Kingdom Food Surveillance System

In Northern Ireland the Environmental Health Officers of the 26 District Councils participate in and use the UKFSS database to record details of samples they collected from food premises for analysis and examination.

The database was developed by Health Protection Scotland (HPS) who were commissioned by the Food Standards Agency to deliver the software across the United Kingdom within a 3-5 year period. HPS provides project management, user support, maintenance and development of the UKFSS to local authorities in England, Scotland and all the District Councils in Northern Ireland.

The specific aim of the UKFSS is to provide a robust food surveillance system for the UK, which will deliver added value by permitting key stakeholders to compare local data within a regional and national perspective.

The database was developed to provide a standardised data capture, storage, querying and reporting functionality for the microbiological and chemical analysis of food samples. At the close of 2006 the Northern Ireland Public Health Laboratory and the Public Analyst’s office in Belfast were introduced to the UKFSS and District Councils started submitting their sample information from early 2007. The database is now being used on an ongoing basis by EHOs to process and track food sample history.

UKFSS is able to collect validated sample data across Great Britain and Northern Ireland for food and animal feeds for enforcement authorities but at present feed and food sample details obtained by DARD (QAB) who have enforcement responsibilities in feed establishments and dairies are not currently recorded on the database.
Appendix 2

The Northern Ireland Strategic Committee on Food Surveillance

Background

The formation of a Strategic Committee was one of the recommendations of the Food Surveillance System Implementation Board to ensure that appropriate governance arrangements are in place in relation to the use and publication of data collected and stored on the Northern Ireland Food Surveillance System database (NIFSS).

Purpose

(a) To provide the necessary assurances to FSA in NI on analysis and interpretation of data extracted from the food surveillance database
(b) Produce an annual report on the sampling activities of district councils in N.I. and make recommendations and
(c) Consider targeted or risk based sampling programmes.
Appendix 3

Sampling and analysis arrangements in Northern Ireland

As there is such a wide and diverse range of foods and ingredients that could be sampled, enforcement officers must focus on risk based sampling. Risk is the likelihood of the occurrence of any fault with food that may, in any way, be detrimental to the health of the consumer. When determining risk based sampling a number of factors are taken into consideration and typically these include:

- The premises risk rating for both food hygiene and standards. The risk is a measure of how well a food business is complying with the law. The higher the risk the greater the frequency of inspection and consideration for sampling
- Past history of compliance with hygiene and standards legislation
- Past history of food premises in respect of sample compliance
- New or novel food types or new food businesses may present their own unique problems or risks
- Premises involvement in food poisoning incidents
- Complexity of the food manufacturing process, method of processing and nature of the food and scale of the operation
- Food business operator access to specialist knowledge on hygiene and standards relating to food composition
- Local issues and when to sample, e.g. some food operations may be seasonal and some authorities may have significant Home Authority responsibilities
- Information from Rapid Alert Systems for Feed and Food (RASFF). The rapid alert system provides up to date information on food sampled across Europe which fail to meet feed and food safety requirements.

EHOs who wish to obtain information on microbiological food contamination must submit the food sample(s) to an official control laboratory for food control purposes. Laboratories used for the microbiological examination of food must be accredited to a recognised standard and for food control purposes, recognised by the EC. In
Northern Ireland the Food Examiner appointed by District Councils is based at the Northern Ireland Public Health Laboratory.

Where regulatory standards apply, the results of microbiological testing are interpreted by the Food Examiner according to the requirements of Regulation EC No. 2073/2005. Additionally, the results of microbiological sampling of ready-to-eat foods not covered by the Regulation are classified according to the PHLS guidelines.

For the purposes of foods examined in 2010 by the Food Examiner the results are interpreted as one of the four grades of microbiological quality and these are detailed as follows:

- ‘Satisfactory’
- ‘Acceptable’
- ‘Unsatisfactory’
- ‘Unacceptable / potentially hazardous’

For the purposes of the UKFSS database samples that have been recorded as ‘Acceptable’ by the laboratory are regarded as ‘Unsatisfactory’ and counted as such in the database.

EHOs who wish to obtain information concerning the labelling and composition of food will submit food samples to a Public Analyst who, like the Food Examiner, is a qualified person who is appointed under the provisions of the Food Safety (Sampling and Qualifications) Regulations (NI) 1991. In Northern Ireland, Eurofins is the official control laboratory appointed by District Councils to analyse food samples for compliance with composition and labelling legislation.

The Public Analyst has an extensive remit in terms of analysis of food and this includes:

- Food composition and adulteration
- Labelling and mis-description
- Additives and contaminants
- Transfer into food of components of materials and articles in contact with food, e.g. wrappings
- Nutrition information
- Novel foods composition and labelling
- Complaints about the fitness, nature, substance and quality of food
Appendix 4

Chemical and Microbiological Food Surveys

In the United Kingdom a number of sampling programmes are initiated by organisations such as:

- Local Authority Co-ordinators of Regulatory Services (LACORS) now Local Government Regulation
- Food Standards Agency (FSA)
- Health Protection Agency (HPA)

Each year a number of authorities across the UK are invited to participate in surveys. The surveys are often reported separately by the sponsoring organisation and participating authorities are informed of the results. No attempt is made in this report to outline the outcomes of these surveys, some of which have not been fully completed.

In addition there are also opportunities for authorities in Northern Ireland to participate in local sampling initiatives co-ordinated by Northern Ireland Food Liaison Group (NIFLG).
### CHEMICAL FOOD SURVEYS
#### 2010

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<td>Preservatives and Salt/Sodium in locally produced ham and bacon</td>
<td>NIFLG</td>
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<td>Complete Report Issued</td>
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<td>Sulphur Dioxide in sweets and fruit bars</td>
<td>Eurofins</td>
<td>May-June 2010</td>
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<td>FSA Imported Food Survey</td>
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<td>FSA Imported Food Survey</td>
<td>May-June 2010</td>
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<td>Substitution of reformed pork for ham in Pizza toppings</td>
<td>NIFLG</td>
<td>Sept-Oct 2010</td>
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<td>Sodium and fats in Chinese &amp; Indian Takeaway foods</td>
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<td>Speciation of fish</td>
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## MICROBIOLOGICAL FOOD SURVEYS
### 2010

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<td>NIFLG</td>
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